Kulvir Jaydeep Chavda | Engineering Portfolio: www.kulvirchavda.com

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EDUCATION, SKILLS, & COURSES

University of Illinois at Urbana-Champaign - UIUC, *Junior* *Graduation: May 2026*

B.S in Aerospace Engineering with a Minor in Computer Science ***Cumulative GPA: 3.8***

- **Skills:** Java, Python, C++, Arduino C++, Siemens NX, Fusion 360, CATIA, SolidWorks, Eagle EDA, Proteus V8, BurnSim, Computational Fluid Dynamics, MATLAB & SIMULINK, Finite Element Analysis, 3D Printing, Soldering, Microsoft Word, Microsoft Excel, and Microsoft PowerPoint – Striving to learn more & expand my skillset.
- **Taken/In-Progress:** Incompressible Flow, Mechs of Aerospace Structures, Aero Dynamical Systems, Data Structures, Aero Flight Mechanics, Discrete Structures, Theoretical & Applied Dynamics, Calculus & Linera Algebra, Full Intro CS.

WORK EXPERIENCE & ENGINEERING PROJECTS

Aerospace Engineering Intern – Summer 2024 *June, 2024 – August, 2024*

Adani Defence & Aerospace, Ahmedabad, India

- Conducted foundational research and design for short-range missile systems targeting drone countermeasures.
- Analyzed project requirements to create/present a detailed 2-month action plan to go from concept-to-design successfully.
- Conceptualized 3 engineering design variants for senior engineers, within 2 weeks, to kickstart project development.
- Designed vehicle trajectory, by hand, and modelled it using python to gain insight on vehicle propellant necessities.
- Calculated potential propulsive & aerodynamic forces, by hand, on vehicle and optimized structure materials accordingly.
- Created 6 weekly design presentations to verify technical integrity, requirements, & reduce manufacturing time by 20-50%.
- Wrote a final 40-page engineering design report outlining math, references, CAD designs, blueprints, and future steps.

Head of Technical Projects *January, 2023 – Present*

Minorities in Aerospace (MAero) – University of Illinois, Urbana Champaign

- Planning, advising, and recruiting engineering students for any technical initiative MAero takes on as an organization.
- Leading technical project teams to design/build a High-Altitude Rocket, Sustainable Airplane, and fully 3D-Printed Drone.
- Spearheading brainstorming sessions to create design options, plan budget, and optimize technical parts lists for projects.
- Secured $2,500 of funding from Blue Origin in my first semester & organized a research event with 5+ professors.

Aerospace Educational Development & Outreach *April, 2023 – May, 2024*

Department of Aerospace Engineering – University of Illinois, Urbana Champaign

- Taught 15+ STEM teachers & students in rocket science, guiding them through building, flying, and analyzing rockets.
- Built, optimized, and troubleshooted 150+ short range rockets & avionics to collect flight data & analyze trends.
- Identified and implemented course improvements through detailed surveys that improved course structure & effectiveness.

Project Systems Engineer *September, 2023 – November, 2023*

Department of Defense S.T.E.M. Vertically Landed Rocket Challenge

- Built a lander that, under free fall, used a solid rocket motor to reorient and land itself from an altitude of 30m.
- Utilized UIUC's VLR parts resource & online avionics programming library to optimize our model & simulate landings.
- Achieved successful burn and recorded avionics data from an unsuccessful landing to improve design in the future.

RESEARCH & WRITING

Researcher & Controls/Systems Engineer *November, 2024 – Present*

Autonomous Control, Exploration, Intelligence & Systems Lab (ACXIS) at UIUC – Dr. Hiroyasu Tsukamoto

- Designing foundational experiments for hardware implementation, testing, and verification of autonomous three-dimensional GNC algorithms in swarms of n-numbered heterogenous unmanned aerial vehicles on unmapped terrain.
- Applying theoretical controls theory research of two PhD students to real-world scenarios using numerous types of UAVs.

Researcher & First Author, University of Illinois at Urbana-Champaign *May, 2023 – April, 2024*

Title: ***Using the Drag Equation and Euler's Method in Python to Predict Model Rocket Flight Trajectories***

- Utilized Rocket Flight Data (24 flights), Motor Thrust Tests, and Python to write algorithm that predicts rocket trajectories.
- Conducted 25+ solid rocket-motor thrust tests to create accurate theoretical thrust curves to plug into python algorithms.
- Designed algorithm structure and wrote python application with a GUI (Graphical User Interface) to take user input, and subsequently output graphs depicting with-drag/without-drag altitude vs time & drag-force vs time for the model rocket.
- Publication awarded 3rd place at the AIAA Region III Conference in April, 2024 (https://doi.org/10.2514/6.2024-84150).